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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/343,092	06/30/1999	HIDEO SAMURA	50059-048	7482

20277 7590 12/28/2006
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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/343,092

Applicant(s)

SAMURA, HIDEO

Examiner

LAM S. NGUYEN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 12 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 30 June 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The indicated allowability of claim 12 is withdrawn in view of the newly discovered reference(s) to Hackleman (US 5414245). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cruz-Uribe (US 4680595) in view of Chang (US 6099111), Hasegawa et al. (US 5530465), and Hackleman (US 5414245).

Cruz-Uribe et al. discloses a head for ink-jet printer comprising:

a substrate on which a plurality of ink nozzles (*FIG. 3, elements 34, 68*) and a plurality of ink passages (*FIG. 3, element 66*) each communicating separately to each of the ink nozzles;

an inorganic substrate which is joined with said substrate and is provided with ink chambers (*FIG. 3, element 30*) each communicating separately to each of the ink passages (*FIG. 3, element 66*); and

a piezoelectric element (*FIG. 3, element 50*) of ferroelectric substance for changing separately a capacity of each of the ink chambers to jet an ink from said ink nozzles through said ink passages;

wherein said ink passages are fine as compared with said ink chambers

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and said ink nozzles are fine as compared with said ink passages (*FIG. 3, elements 30 and 66: The width of the ink passage 66 is narrower than the one of the ink chamber 30*); and

wherein said inorganic substrate has a common ink supply port (*FIG. 3-5, element 40, 28, 24, 26*) for supplying ink to said plurality of ink passages (*FIG. 4*) at a portion on a surface of said inorganic substrate.

- Cruz-Urbe et al. does not disclose wherein the common ink supply port is located between a plurality of said piezoelectric elements.

Chang discloses an ink jet recording head having piezoelectric elements (*FIG. 2, element 11, 12*) acting as pressure generating elements on ink chambers (*FIG. 2, element 3, 4*) to eject ink drops through nozzles having tapered configurations (*FIG. 2, elements 7, 8*), wherein the ink chambers are filled with ink through a common ink supply port from an ink tank (*FIG. 2, element 2, 13, 20, 22*) that is located between a plurality of said piezoelectric elements (*FIG. 2, element 11, 12*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printhead disclosed by Cruz-Urbe et al. such that locating the common ink supply port between a plurality of said piezoelectric elements as disclosed by Chang. The motivation of doing so is to prevent crosstalk as much as possible from occurring thereby allowing the ink droplet ejection characteristics to be stabilized as taught by Cruz-Urbe et al. (*column 2, lines 28-31*).

- Cruz-Urbe et al. also does not disclose wherein the substrate on which the plurality of ink nozzles and the plurality of ink passages are formed by a plasma etching method is a silicon substrate.

Hasegawa et al. discloses an ink jet head provided with a plurality of nozzles and ink passages arranged in an array on laminated silicon substrates in which the ink nozzles and the ink passage are communicated (*Abstract and column 2, lines 11-14, FIG. 8B, elements 101, 107*), wherein the plurality of nozzles and ink passages are formed by a plasma etching method (*column 15, lines 21-30 and column 16, lines 14-30*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printhead disclosed by Cruz-Uribe et al. such that forming the ink nozzles and the ink passages on the silicon substrate as disclosed by Hasegawa et al. The motivation of doing so is to obtain high nozzle density even when number of nozzles is increased as taught by Hasegawa et al. (*column 4, lines 34-35*).

- Cruz-Uribe et al. also does not disclose wherein a pitch of the ink nozzles is approximately 20 μm .

Hackleman discloses an ink jet printhead including an array firing ink nozzles having a pitch of the ink nozzles is approximately 20 μm (*Column 4, lines 55-61*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printhead disclosed by Cruz-Uribe et al. such that forming the ink nozzles having the pitch approximately 20 μm as disclosed by Hackleman. The motivation of doing so would have been to obtain a standard printing technology applications (1200 ink jet dots per inch) as taught by Hackleman (*column 4, lines 55-61*).

Response to Arguments

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The indicated allowability of claim 12 is withdrawn in view of the newly discovered reference(s) to Hackleman (US 5414245). Rejections based on the newly cited reference have been made as above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



LAM SON NGUYEN